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TV CHANNELS, SELF CONTROL AND HAPPINESS

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Abstract: In many countries, TV viewers have access to more and more TV channels. We study whether people can cope with this and watch the amount of TV they find optimal for themselves or whether they are prone to over-consumption. We find that heavy TV viewers do not benefit, but instead report lower life satisfaction when exposed to more TV channels. This finding runs counter to the standard economic prediction that a larger choice set does not make people worse off. It suggests that an identifiable group of persons experience a self-control problem when it comes to TV viewing. (98 words)

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1. Introduction

TV viewing is the most important leisure time activity in modern societies. Revealed preference therefore suggests that, for many people, TV consumption is an important source of well-being. This assessment is in contrast to the mixed appraisal of TV viewing in society. Television has been called a ‘plug-in-drug’, keeping people glued to the screen and impeding the enjoyment of more valuable experiences. Accordingly, the expansion of TV consumption has a negative connotation, being associated with a decline in social capital, an increase in violence and crime, and a weakening of democracy.¹ In sum, there is a strong popular notion that people watch too much TV. People are prone to weakness of will when faced with the temptation of its immediate benefits with low immediate costs. They watch more than they would like to watch, both *ex ante* and *ex post*.

This paper empirically studies the claim of systematic errors in TV consumption, based on people’s own *ex post* evaluations. People’s self-reported subjective well-being is analyzed as a new empirical approach in order to discriminate between different theories predicting similar patterns of behavior but differences in individual welfare (Frey and Stutzer 2005; Gruber and Mullainathan 2005). In particular, we aim at testing whether heavy TV viewers experience reduced individual well-being because of their consumption choice.

We study whether the effect of having a larger number of TV channels available, i.e. a larger choice set, raises people’s subjective well-being, as would be expected by standard economic theory. The expansion and diversification of media supply, due to VCR, cable or satellite has, in many countries, gone hand in hand with increased television viewing time (see the collected studies in Becker and Schoenbach 1989). The longer time spent in front of the TV set is consistent with rational consumers (they view the duration optimal for themselves), as well as with TV viewers who are subject to a self-control problem. A study on the introduction of cable TV in Israel (comparing neighborhoods with a difference-in-difference approach) complements the picture by reporting people’s evaluation of their consumption choice (Weimann 1996). It is found that, with cable TV, there is a significant increase in the percentage of viewers agreeing to the statements “I often watch television more than I intend to” (28% before cable introduction and 41% one year after) and “watching television is often a waste of time” (24% before cable introduction and 36% after). The expanded choice set due

¹ The case for negative impacts of TV consumption on society is, e.g., made by Kubey (1996), Putnam (2000), Sparks and Sparks (2002) and Gentzkow (2006).

to the technological change seems to have led to an increase in the number of people watching more TV than they planned to, or more than they think is good for them.²

While more choice potentially raises individual welfare (if people are able to rationally maximize utility, as is assumed in the traditional economic framework), it is hypothesized here that people with severe self-control problems suffer a utility loss. The positive effect from a potentially better match between TV programs and individual preferences is more than offset by the loss of well-being resulting from over-consumption.

The hypothesis is tested, based on recent data from the European Social Survey, World Values Survey and Television Key Facts from IP Germany. In the first step, consumers likely to have a self-control problem are identified as those people with a large positive residual in a regression explaining the amount of TV viewing according to individual socio-demographic characteristics (referred to as “*heavy viewers*”). In the second step, the effect of a higher number of TV channels on subjective well-being is estimated for heavy TV viewers in comparison with moderate TV viewers. Based on more than 70,000 individual observations from 45 country samples, we find a statistically significantly negative interaction term between (residual) TV viewing and the number of TV channels, suggesting a negative marginal effect of additional TV channels on the well-being of heavy viewers.

This study links to three strands of economic literature. First, it contributes to the recent research on media consumption and its consequences (see, e.g., Prat and Strömberg 2005; Bruni and Stanca 2006a; b; Gentzkow 2006; Gentzkow and Shapiro 2006). Second, it expands the number of new opportunities for studying individual welfare provided by happiness research in economics (see the special issue of this journal in July 2001 and for surveys Frey and Stutzer 2002b; a; Layard 2005). Third, it offers a complementary approach to studying time inconsistency in consumption choice (for a recent survey, see Frederick et al. 2002).

Section 2 outlines the idea of systematic errors in consumption due to time inconsistent preferences in a framework of decision utility and experienced utility. The empirical testing strategy is derived from a simple graphical analysis. Section 3 presents the data and the results of the empirical application. Section 4 offers concluding remarks.

² Asking people directly whether they think that they watch too much TV could, of course, lead to answers that are motivated by social desirability. It should be noted that surveys on general life satisfaction (as used in our study) are not affected by such a bias, at least not one that is systematically correlated with some specific consumption behavior.

2. Decision Utility and Experienced Utility in a Model of Time Inconsistent Preferences

2.1 Self-Control and Time Inconsistency

Standard economics assumes that people have no self-control problems, and that they are able to make decisions based on their long-term preferences. Viewed this way, consuming goods and pursuing activities that some people consider an addiction, or at least a bad habit, such as smoking cigarettes, taking cocaine, watching TV extensively, or constantly eating fast food, are considered a rational act. Contrary to this view, many people judge their own and other people's consumption behavior as irrational, in the sense that they think they would be better off if they consumed less of these goods. This emphasizes the role of myopia in individual behavior. People with myopic vision focus on consuming in the present moment and lack discernment or a long-term perspective in their thinking and planning, and thus undermine their well-being over time. Goods offering immediate benefits at negligible immediate marginal costs are generally tempting in this respect. The psychological literature offers a large body of evidence on such failures in self-control (for an overview see e.g. Baumeister and Heatherton 1996). In economics, this inconsistent time preference is most prominently formulated in models of (quasi-)hyperbolic discounting (see, e.g., Laibson 1997). A low discount factor (i.e. a discount factor decreased by β , $\beta \in (0,1)$) is applied between the present moment and some time in the near future and a constant discount factor δ thereafter. An excellent account of the recent extensive empirical and theoretical literature on time inconsistent preferences is provided by Frederick et al. (2002).

2.2 Decision Utility Versus Experienced Utility

Based on revealed preference, it is difficult to discriminate between the view of consumers as rational actors and consumers facing self-control problems.³ Therefore, two extensions of the traditional emphasis on ex ante evaluation and observed decision are pursued. The first extension, the standard economic concept of decision utility, is complemented by the concept

³ We are aware that there are specific situations in which the standard economic model rules out certain types of behavior and mere observation of a certain action rejects the standard economic model. There are some studies successfully pursuing this approach. Two important examples that document the kind of behavior, where the standard model doesn't apply, are DellaVigna and Malmendier (2006), who examine gym attendance under different contracts, and Skiba and Tobacman (2005), who show that certain types of payday loans would always be rejected by time-consistent individuals.

of experienced utility (Kahneman et al. 1997). The latter refers to an individual's evaluation of actual experiences in terms of positive and negative affects or in terms of satisfaction. This distinction between decision and experienced utility makes it possible that ordering of experiences systematically diverge from ordering of options derived from observed behavior. The second extension is closely related to the first, and emphasizes ex post evaluations as a valuable source of information about the possibility of bounded rationality in people's decision-making. How do people fare after they have made decisions? If temptation interferes with people's decision making, there might well be a gap between what individuals like and what they do.

This poses the question of how the (normative) standard is ascertained, and whether seemingly irrational behavior should be judged welfare reducing, because it violates certain time consistency criteria. While there is an extended debate on this issue (see, e.g., Bernheim and Rangel 2005), we use people's own evaluation as a standard. This standard is operationalized in terms of individuals' judgments of their overall subjective well-being, rather than how they evaluate options when confronted with a particular decision.

2.3 Testing Strategy

The conceptual framework of decision utility and experienced utility is summarized in a graphical analysis of a simple two-period model and extended to illustrate the empirical testing strategy. We outline the case where an extended opportunity set, here the number of available TV channels, decreases the experienced utility of consumers with a severe self-control problem⁴.

An individual decides about the consumption of x , here the amount of time devoted to TV viewing, based on the enjoyment of x , i.e. utility $u(x)$ in period 1, and the future costs $c(x)$ in period 2, discounted by a factor δ . This reflects that benefits are experienced instantaneously, with zero immediate costs. One simply has to push a button. In contrast to going to the cinema, the theater or any outdoor activity, there is no need to be appropriately dressed before leaving the house, and there is no need to buy a ticket or to reserve a seat in advance. Unlike other leisure activities, TV viewing does not need to be coordinated with other persons. As a

⁴ Our analysis is related to the one by O'Donoghue and Rabin (2001) who show in a theoretical model that more choice among tasks with immediate costs and future benefits can lead to more severe procrastination and that a person might procrastinate worse pursuing important goals than unimportant ones. Our analysis is much simpler and emphasizes the case in which a more attractive alternative with immediate benefits and future costs might lead to more severe myopic behavior.

consequence, watching TV has, compared to other leisure activities, an exceedingly low or nonexistent entry barrier. The costs resulting from TV consumption are largely experienced in the future. The negative effects of not enough sleep, for example, only arise the next day, and the consequences of underinvestment in social contacts, education or career take much longer to manifest.⁵ In this choice situation, with TV viewing offering instant benefits at negligible immediate marginal costs, time inconsistency may arise. At the outset, a consumer (i.e. in period 0) plans to spend x^* minutes watching TV, equalizing marginal benefits and marginal future costs, i.e. $u'(x) = \delta * c'(x)$ representing the first order condition. However, when faced with the actual decision about TV consumption and the temptation of immediate gratification, future costs are only partly taken into account (here by a factor $\beta \in (0,1)$) and the consumption plan is revised so as to equalize $u'(x) = \beta * \delta * c'(x)$. People who lack the self-control to maintain their original plans end up consuming x^c , i.e. more than they consider optimal for themselves in the long-run, and experience an individual welfare loss.

Figure 1 illustrates this situation for a specific set of preferences. It shows x^* , the planned consumption, and x^c , the actual consumption level chosen due to the self-control problem, i.e. $0 \leq \beta < 1$. The triangle ABC indicates the individual welfare loss due to over-consumption. Total experienced utility over the two periods is lower than what it could be if x^* were consumed.

[Figure 1 about here]

Based on people's reported judgment of their overall satisfaction with life, it would in principle be possible to directly capture the welfare loss. For otherwise similar people, the subjective well-being of heavy TV viewers is compared with the subjective well-being of moderate viewers, and the difference is attributed to systematic errors in consumption due to a lack of willpower. However, this approach is empirically not feasible. An omitted variable bias could occur because unobserved individual differences, like being an introvert, might well be related to lower subjective well-being and higher TV consumption, regardless of any self-control problem. Reverse causation is possible: Unhappy people might just spend more

⁵ An increase in one's material aspirations, due to the rich, famous and beautiful being overrepresented on the screen, might not be foreseen at all.

time watching TV. Finally, preference heterogeneity with regard to TV viewing might be directly related to people's reports of their subjective well-being.

We argue that these empirical challenges can be overcome in a refined approach studying the expansion of the opportunity set. In the realm of television, this is the ongoing increase in the number of TV channels available.

Figure 2 offers a graphical analysis that illustrates the idea. The expansion of the choice set is represented by an increase in the marginal utility of TV consumption from $u_1'(x)$ to $u_2'(x)$. An individual with time-consistent preferences expands TV consumption from x_1^* to x_2^* and experienced utility is increased by the area ADG. For an individual with time-inconsistent preferences, there are two effects on experienced utility resulting from the shift in marginal utility. First, experienced utility from the initial amount of TV viewing is increased, as more channels are assumed to mean more variety and better preference satisfaction. In other words, consumer surplus is increased, reflected by the area ABHG⁶. Second, the increased attractiveness of TV viewing leads to a revision of consumption plans. At this stage, an expansion of the opportunity set might reduce overall experienced utility. As people with a self-control problem undervalue future costs when faced with the decision about turning their TV on or off, they increase consumption more than would be optimal. Again, they realize a level of experienced utility that is below what they could experience if they optimally chose TV consumption. The reduction in experienced utility due to a further increase in consumption amounts to the area CHEF. Whether more opportunities make people with a self-control problem worse off overall depends on the relative size of the two effects on people's experienced utility. In figure 2, for the particular combination of marginal utility, marginal costs and β , CHEF is larger than ABHG.

[Figure 2 about here]

Our empirical analysis in the next section uses the possibility of a negative net effect as a testing strategy to identify self-control problems in TV consumption. It is hypothesized that the experienced utility of people with a severe self-control problem in TV viewing is reduced when they are exposed to a larger number of TV channels. We are aware that this is a

⁶ Area ABHG consists of two parts: ADG is the increase in actual consumer surplus and ABHD is part of the former welfare loss that is now offset.

conservative test and that the threshold is set high to reject the rationality hypothesis. Even if nobody loses from an increased opportunity set, there might still be over-consumption. However, the over-consumption cannot be detected, either by revealed behavior or by studying reported subjective well-being.

3. Empirical Analysis

3.1 Data

The empirical analysis is based on data from the first wave of the European Social Survey (ESS) and the third wave of the World Value Survey (WVS), and supplemented by data on the number of TV channels at a country level collected by IP Germany. Data from the ESS is for 21 European countries in 2002/2003.⁷ For the WVS, data on the number of TV channels is available for 24 countries in the years 1995 to 1997.⁸ 8 countries⁹ are common to both surveys and are treated as separate entities, as they are observed in different years. In each country, between about 1,000 and 3,000 individuals were interviewed, supplying us with a total sample of 72,012 observations.¹⁰

The three key variables in our analysis are TV consumption, reported satisfaction with life and the number of TV channels available in a country.

In the ESS, *television consumption* is captured by the question “On an average weekday, how much time do you spend watching television?” with answers falling into 8 categories, ranging from “no time at all” to “more than 3 hours”. In the WVS, the question is “How much time do you usually spend watching television on an average weekday?” and answers are coded in 4 categories from “do not watch television or do not have access to TV” to “more than 3 hours per day”. For each category, the mid-point value of the time interval is calculated. For the top

⁷ The countries included are Austria, Belgium, the Czech Republic, Denmark, Finland, France, Germany, Greece, Hungary, Ireland, Italy, Luxembourg, The Netherlands, Norway, Poland, Portugal, Slovenia, Spain, Sweden, Switzerland and the United Kingdom. Observations from Israel are excluded, as the number of TV channels is not known.

⁸ The countries included are Belarus, Brazil, Bulgaria, Croatia, Estonia, Finland, Germany, India, Japan, Latvia, Lithuania, Macedonia, Mexico, Norway, Poland, Russia, South Africa, Slovenia, Spain, Sweden, Switzerland, Ukraine, USA and Venezuela.

⁹ The countries included in both samples are Finland, Germany, Norway, Poland, Slovenia, Spain, Sweden and Switzerland.

¹⁰ From the 74,458 people originally surveyed, 1,780 did not answer the question regarding their amount of TV consumption and 666 did not answer the question on their life satisfaction.

category “more than 3 hours”, 3.5 hours is chosen. Average TV viewing time in the sample is 2.0 hours. There is, however, substantial variation between countries. TV consumption is lowest in India with 1.1 hours and highest in Macedonia with 2.7 hours.

Individual *life satisfaction* is measured by the question: “All things considered, how satisfied are you with your life as a whole nowadays / these days?” Answers are given on an 11-point scale ranging from 0 “extremely dissatisfied” to 10 “extremely satisfied” in the ESS and on a 10-point scale ranging from 1 “dissatisfied” to 10 “satisfied” in the WVS. To make the two scales comparable, the lowest two categories in the ESS, 0 and 1, are combined into one category. Average life satisfaction in the sample amounts to 6.7 (standard deviation 2.4), ranging from a low of 4.0 in Ukraine to a high of 8.4 in Denmark.

In addition, both surveys include a large number of socio-demographic characteristics (mentioned below).

Statistical data on the number of *television channels* is available at the country level, published by IP Germany in the form of the number of channels available to 70% of households. For the ESS, data relates to the year 2002 (2003 for Switzerland) and for the WVS to 1999 due to reasons of data availability (2000 for Japan, South Africa, Sweden, India and Venezuela). The number of TV channels available to 70% of the population amounts, on average, to 10.6 channels (standard deviation 13.5) and ranges from 1 in India to 62 in the United States. The median is 5 channels (see Table A1 in the Appendix).

3.2 Results

We proceed in two steps to test for possible self-control problems in TV viewing. In the first step, individual TV viewing time is regressed on respondents’ socio-demographic characteristics for each of the 45 country samples separately, and the residual TV viewing time, not explained by these individual characteristics, is calculated. Heavy viewers, i.e. respondents who watch more TV than predicted by their individual characteristics, and therefore have large residuals, are suspected to be those with a possible self-control problem when it comes to television viewing. Having many tempting TV channels tends to aggravate heavy viewers’ self-control problem, leading to a higher utility loss than having less TV channels. Of course, heavy viewers could just be the ones with a high preference for TV consumption. In this case, more TV channels would raise their utility level, as it increases the probability that there is a program on the screen that matches their preferences. It should at least not reduce it, because viewers could just ignore the additional channels. The individual

characteristics we use to explain TV viewing time are household income, age, gender, nationality (i.e. whether born in the country of residence or not), employment status, education, marital status, type or size of place of living and, additionally for the ESS, household size and working hours¹¹. Between 7% and 23% of the variation in TV viewing time is explained by these individual characteristics. Table A2 in the Appendix takes the OLS regression for the United Kingdom as an example. Residual TV viewing time ranges from -3.05 to 2.95. In order to make the residuals comparable across countries, they are converted into separate deciles for each country.

In the second step, we test how additional TV channels affect the individual welfare of unpredictably heavy TV viewers. If the latter suffer a self-control problem, they are expected to experience lower individual well-being with additional channels. In our test, reported life satisfaction is used as an approximation to individual welfare.

Two microeconomic life satisfaction functions are specified. In the first one, the life satisfaction LS_i of individual i depends on (the decile of) his or her residual television consumption $ResidTV_i$, (as an indicator for a possible self-control problem regarding TV consumption), on the interaction between this indicator and the number of TV channels N_j available in country j , on personal characteristics X_i , as well as on country specific effects D_j :

$$LS_i = \beta_0 + \beta_1 ResidTV_i + \beta_2 (ResidTV_i * N_j) + \gamma_1 X_i + \gamma_2 D_j + \epsilon_i \quad (1)$$

The control variables used are income, age, gender, whether born in the country of residence or not, employment status, education, and marital status. The variables are not coded in exactly the same way in both surveys, but similar enough to make them comparable.

Column A in Table 1 shows the regression results for the first specification. The interaction effect between residual TV viewing and the number of channels available has a negative sign, is large (-0.019) and statistically significant at the 99%-level. The higher a person's residual TV consumption is, the smaller the marginal effect of an additional channel on his or her life satisfaction. Yet, according to this specification, it cannot be assessed whether more TV channels in fact have a negative effect on the life satisfaction of heavy TV viewers. The

¹¹ It has to be noted that some of these variables could be systematically related to having a self-control problem. It could, for example, be hypothesized that people with low self-control face a higher probability of becoming unemployed. Controlling for employment status might therefore not be appropriate. However, only controlling for the exogenous factors age and gender in the first step does not change the general results of the subsequent empirical analysis.

marginal effect of the number of TV channels on life satisfaction could just be smaller for people with high residuals than for people with low residuals, but not negative. However, it can already be said that people who watch much more TV than predicted, based on their individual characteristics, seem to benefit the least from additional TV channels. If unpredictably high TV consumption indeed reflects personal tastes, then this result might come as a surprise.

[Table 1 about here]

In order to calculate the marginal effect according to the level of residual TV viewing, we specify a second extended life satisfaction function. In addition to the variables in equation (1), the number of TV channels available in a country is included in the regression. As this information is at a country level, country specific fixed effects can no longer be controlled for. Instead, we add the control variables real Gross National Product (adjusted for comparative price level) GNP_j and its square, as well as average TV viewing time $AvgTV_j$ in a country¹². This leaves us with the following second specification:

$$LS_i = \beta_0 + \beta_1 ResidTV_i + \beta_2 N_j + \beta_3 (ResidTV_i * N_j) + \gamma_1 X_i + \gamma_2 GNP_j + \gamma_3 GNP_j^2 + \gamma_4 AvgTV_j + \varepsilon_i \quad (2)$$

Column B in Table 1 shows the results for this specification. The interaction term between residual TV viewing and the number of TV channels is robust and again has the same size and statistical significance as in the previous specification. For further interpretation of the coefficients, it has to be taken into account that the number of TV channels and residual TV viewing time are mean adjusted. The coefficient of the constitutive term number of TV channels (natural logarithm) is therefore estimated for TV consumers with an average residual (the ones in the 5th decile). It captures the marginal effect on life satisfaction if they have more channels to choose from. It is estimated to be negative (-0.11) but not statistically significant (t=1.43). From the latter coefficient and the interaction term, the marginal effects of the number of TV channels on life satisfaction can now be calculated for different levels of residual TV viewing. The calculations are presented in figure 3a) together with the 90% and 95%-confidence interval.

¹² Data for Gross National Products are from World Development Indicators (several years) and Penn World Table 6.1 (Heston et al. 2002), and data for average TV viewing time are from IP Germany (several years).

[Figure 3 about here]

For people in the first decile of residual TV viewing time, i.e. those watching much less than predicted, having a higher number of TV channels to choose from has no impact on their life satisfaction. The marginal effect is close to zero. For people with intermediate residual TV viewing time, the marginal effect becomes negative and statistically significant at the 90% and 95% significance level for the 7th and 8th decile respectively. For people in the highest decile, the marginal effect is large and negative (-0.20) and statistically significant at the 95% level (t-value 2.40). Respondents viewing much more TV than predicted (10th decile) report *ceteris paribus* a 0.20 lower life satisfaction when, for example, living in a country with 10 TV channels compared to living in a country with only 3 channels. This effect is sizeable; it corresponds for example to one third of the difference in life satisfaction between married and divorced people (-0.60).

We also estimated a more flexible specification (not shown in Table 1), allowing the marginal effect of additional TV channels to vary freely for each level of residual TV consumption. This specification takes into account that the group of people with large negative residuals (the ones in the 1st decile) may not be an appropriate standard for comparisons, as implied by the former specification. Figure 3b) presents the results of the more flexible specification, which includes dummy variables for each decile of residual TV consumption. The calculated marginal effects of additional TV channels on life satisfaction show a similar pattern and magnitude to the more rigid specification. While there seems to be no effect for additional TV channels on the life satisfaction of moderate TV viewers (1st to 3rd decile), there are sizeable negative marginal effects for people watching more than predicted (7th decile and higher).

Thus, heavy TV viewers not only seem to benefit less from additional TV channels, but also to experience a reduced level of life satisfaction. This finding is consistent with the view that part of observed individual TV consumption is due to a lack of will power when exposed to the temptation of satisfying immediate pleasure.

4. Concluding Remarks

Standard economic theory assumes that individuals are rational in the sense that they engage in the optimal amount of consumption based on their own evaluation. In particular, a larger choice set is expected to increase (or at least not decrease) utility, as it enables people to better

match their preferences with supply. Behavioral economics has identified various circumstances in which that assumption is questionable. This paper adds another case in which self-control problems lead to excessive TV viewing, according to the viewers' own evaluation.

Of course, it does not follow that the government should intervene, because its actions might well worsen the situation. It is presumably more effective to support individuals subject to self-control problems by providing ways of overcoming their weakness, for example by proposing self-binding mechanisms (for a broader discussion see, e.g., O'Donoghue and Rabin 2005).

Rational choice is probably an appropriate characterization of a large fraction of observed behavior. TV consumption might, however, pose a challenge, and maybe even a particularly relevant one, because TV is one of the most time-consuming activities of people in today's world: in many countries, over their entire lives, people devote, on average, about as many hours to watching TV as they do to work. Hardly anyone would deny that watching TV provides pleasure, at least some of the time, and that it is an important source of information. Yet, as our research suggests, some people are not able to optimally trade off the benefits and the (future) costs associated with it.

Our analysis tends towards an explanation of the amount of TV consumption rather than of marginal reactions due to changes in relative prices. Valuable insights can be gained from going even further in this direction. In fact, the most immediate consequence of television – the immense consumption of time – has so far received little attention in research. The growing body of work on the economics of time use (see, e.g., the collected studies in Hamermesh and Pfann 2005) will hopefully shed further light on how individuals allocate the ultimate scarce resource, time.

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Figure 1: The Loss of Experienced Utility with Time Inconsistent Preferences

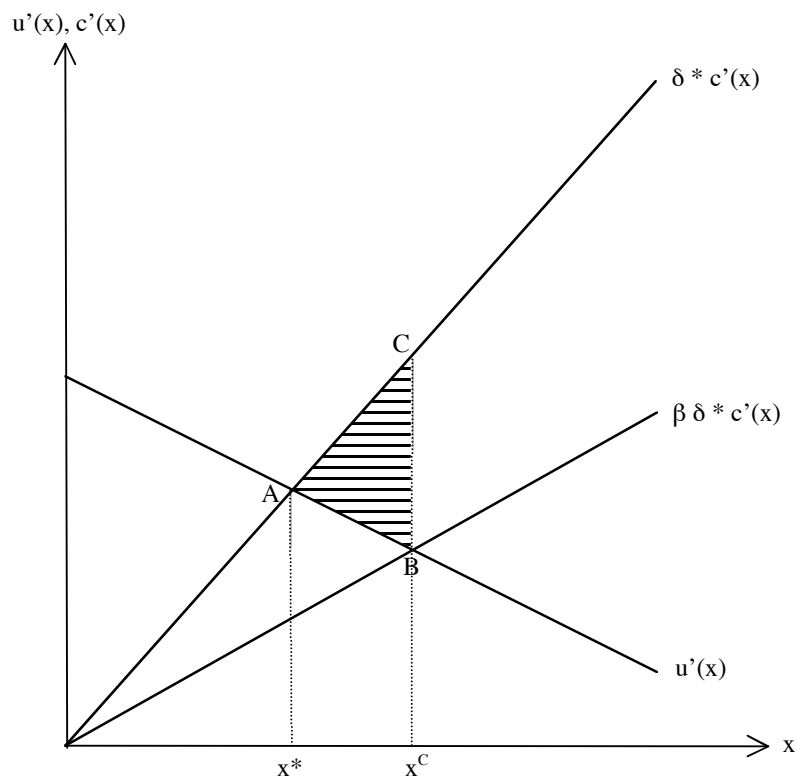


Figure 2: Gains and Losses in Experienced Utility Due to a More Attractive Technology

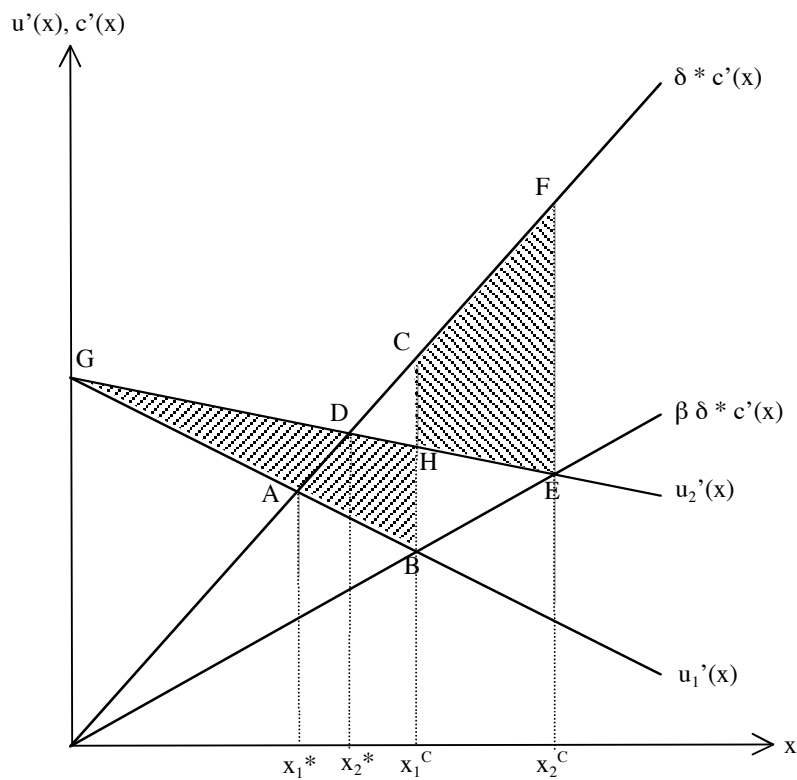


Table 1: TV Consumption, Number of TV Channels and Life Satisfaction

<i>Dependent variable:</i>	A		B	
Life satisfaction	Coefficient	t-value	Coefficient	t-value
Decile of residual TV viewing (5 th decile=0)	-0.009 *	-2.36	-0.009 *	-2.35
log (number of TV channels, mean adjusted)			-0.108	1.43
Decile of residual TV viewing * log (number of TV channels)	-0.019 **	-3.83	-0.019 **	-3.77
Income deciles	0.121 **	9.72	0.102 **	5.26
Age	-0.082 **	-12.21	-0.089 **	-14.34
Age, squared	0.0008 **	12.38	0.0008 **	14.08
Male		Reference group		
Female	0.067 **	2.68	0.003	0.07
Not born in country of residence		Reference group		
Born in country of residence	0.207 **	3.96	0.337 **	5.04
Paid work, employed				
Paid work, self-employed	0.091 *	2.42	0.236 **	3.48
Unemployed	-0.755 **	-8.94	-0.703 **	-6.57
Retired	0.036	0.77	-0.036	-0.65
In education	0.255 **	4.38	0.272 **	4.06
Housework, looking after children	0.086 *	2.52	0.231 **	4.05
Doing other work	-0.336 **	-5.00	-0.407 **	-6.14
No formal or not completed primary education	-0.404 **	-4.36	-0.194	-1.56
Completed basic or primary education		Reference group		
Upper or post secondary, non tertiary education	0.133 **	3.66	0.022	0.32
Tertiary education	0.262 **	4.80	0.257 **	3.63
Married		Reference group		
Divorced	-0.594 **	-12.64	-0.590 **	-11.40
Separated	-0.916 **	-11.27	-0.886 **	-8.38
Widowed	-0.556 **	-12.19	-0.595 **	-12.39
Not married, living with partner	-0.289 **	-5.72	-0.243	-4.15
Not married, living without partner	-0.499 **	-13.51	-0.445 **	-10.46
European Social Survey		Reference group		
World Value Survey			0.353	2.03
Real GNI (thousands of int. \$, 1997)			0.197 **	7.74
Real GNI (thousands of int. \$, 1997), squared			-0.03e-4 **	-6.06
Average TV viewing time in country (minutes)			-0.008 **	-3.91
Country-fixed effects	Yes		No	
Constant	8.677 **	52.19	7.295	** 12.95
Observations	72,012		72,012	
R ²	0.27		0.22	

Notes: (1) OLS estimates with standard errors adjusted for clustering at country level.

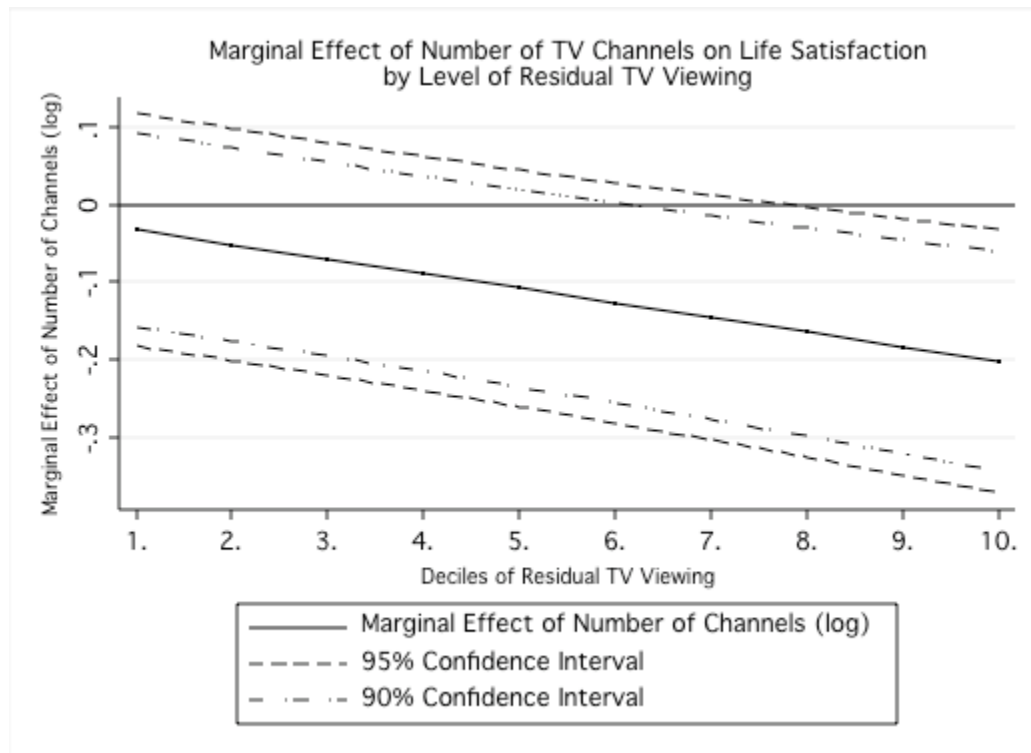
(2) ** significant at 99% level, * significant at 95% level, (*) significant at 90% level.

(2) Dummy variables for the different countries are not shown. Dummy variables for missing observations for income, age, gender, country born, employment status, education, and marital status are also not shown.

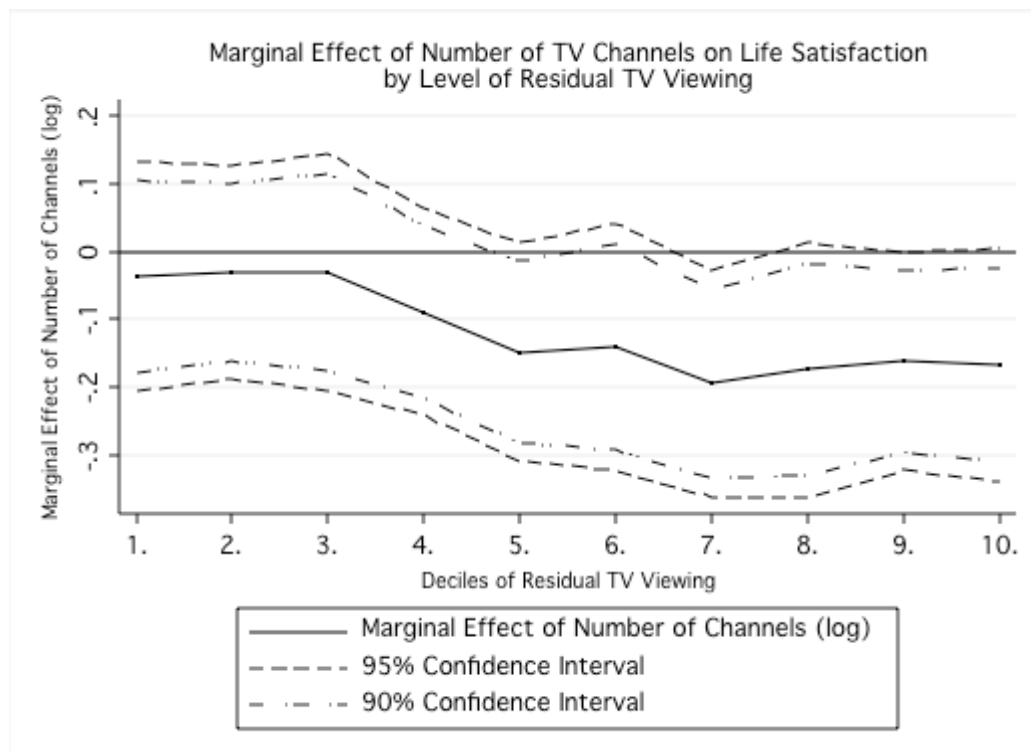
Data sources: European Social Survey (Wave 1), World Value Survey (Wave 3), IP Germany (several years), World Development Indicators (several years), Penn World Table 6.1 (Heston et al. 2002).

Figure 3: Number of TV Channels and Life Satisfaction

a) Linear specification of residual TV viewing



b) Specification based on categories of residual TV viewing



Appendix

Table A1: Descriptive Statistics

	Mean	Standard deviation	Median	Minimum	Maximum	Number of observations
TV viewing (hours)	2.00	1.05	1.75	0.00	3.50	72,678
Residual TV viewing (hours)	0.00	0.92	-0.03	-3.05	2.95	72,678
Life satisfaction	6.65	2.44	7	1	10	72,012
TV channels	10.58	13.51	5	1	62	45

Data sources: European Social Survey (Wave 1), World Value Survey (Wave 3), IP Germany (several years).

Table A2: Covariates of TV Viewing in the United Kingdom

<i>Dependent variable:</i>		
TV viewing time (hours)	Coefficient	t-value
log (household income)	-0.108 **	-3.33
Square root (household size)	-0.141 (*)	-1.86
Working hours	-0.008 **	-4.63
Age	-0.002	-0.19
Age, squared	-0.00003	-0.43
Male	Reference group	
Female	-0.064	-1.28
Not born in country of residence	Reference group	
Born in country of residence	0.164 *	2.08
Paid work, employed	Reference group	
Paid work, self-employed	-0.034	-0.36
In education	-0.361 **	-3.21
Unemployed, actively looking for a job	-0.003	-0.02
Unemployed, not actively looking for a job	-0.512 **	-2.78
Disabled, permanently ill	0.203 (*)	1.79
Retired	0.167 (*)	1.69
Housework, looking after children	0.020	0.35
Doing other work	-0.279	-1.50
Not completed primary education	-1.464	-1.42
Primary or first stage of basic education	Reference group	
Lower secondary or second stage of basic education	0.025	0.09
Upper secondary education	-0.236	-0.84
Post-secondary, non-tertiary education	-0.101	-0.36
First stage of tertiary education	-0.463 (*)	-1.66
Second stage of tertiary education	-0.764 **	-2.17
Married, living with partner	Reference group	
Married, living without partner	0.244	0.59
Separated, living with partner	0.098	0.35

Table to be continued

Continuation of Table A2

Separated, living without partner	-0.117	-0.84
Divorced, living with partner	0.170	1.06
Divorced, living without partner	-0.139	-1.50
Widowed, living with partner	0.446	0.89
Widowed, living without partner	0.004	0.04
Never been married, living with partner	0.054	0.52
Never been married, living without partner	-0.177 *	-2.20
Living in big city	Reference group	
Living in suburbs	0.154	1.50
Living in town	0.170 (*)	1.72
Living in small village	0.147	1.41
Living in the countryside, on a farm	-0.180	-1.15
Constant	3.670 **	7.86
Observations	2,052	
R ²	0.15	

Notes:

(1) OLS estimate.

(2) ** significant at 99% level, * significant at 95% level, (*) significant at 90% level.

(3) Dummy variables for missing observations for income, household size, working hours, age, gender, country born, employment status, education, marital status, and living area are not shown.

Data source: European Social Survey (Wave 1).